

# TALIGITAR: Innovative Media in Increasing Elementary School Students' Learning Interest

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## ABSTRAK

Penelitian mengkaji permasalahan tingkat minat belajar siswa kelas 6 yang tergolong rendah, terutama dalam konteks pembelajaran matematika, khususnya perkalian dan pembagian. Tujuan penelitian ini yaitu untuk mengembangkan TALIGITAR (Tabel Perkalian dan Pembagian Matematika Pintar) dalam upaya meningkatkan minat siswa terhadap matematika. Jenis penelitian ini yaitu Research and Development (R&D) dengan menggunakan metode pengembangan ADDIE. Subjek penelitian yaitu ahli materi, dan ahli media pembelajaran. Subjek uji coba yaitu siswa kelas 6. Metode yang digunakan untuk mengumpulkan data yaitu observasi, wawancara, dan kuesioner. Instrumen pengumpulan data berupa angket. Teknik yang digunakan untuk menganalisis data yaitu analisis deskriptif kualitatif dan analisis deskriptif kuantitatif. Hasil penelitian yaitu penilaian dari ahli materi mencapai persentase sebesar 76% dengan kriteria baik. Ahli media meraih persentase 80% dengan kriteria baik. Hasil uji coba kepada siswa kelas 6 menunjukkan persentase sebesar 78% dengan kriteria baik. Disimpulkan bahwa secara keseluruhan, "Media Pembelajaran TALIGITAR" dianggap sesuai untuk digunakan dalam pembelajaran matematika di kelas 6. Hasil analisis data juga menunjukkan peningkatan minat siswa terhadap matematika setelah penggunaan media tersebut. Penelitian ini dapat memberikan kontribusi penting dalam meningkatkan minat siswa terhadap matematika melalui penggunaan media yang inovatif dan interaktif.

## ABSTRACT

The research examines the problem of the relatively low level of learning interest of grade 6 students, especially in the context of learning mathematics, especially multiplication and division. This research aims to develop TALIGITAR (Smart Mathematics Multiplication and Division Tables) to increase students' interest in mathematics. This type of research is Research and Development (R&D) using the ADDIE development method. The research subjects are material experts and learning media experts. The test subjects were grade 6 students. The methods used to collect data were observation, interviews and questionnaires. The data collection instrument is a questionnaire. The techniques used to analyze data are qualitative descriptive analysis and quantitative descriptive analysis. The research results, namely the assessment from material experts, reached a percentage of 76% with suitable criteria. Media experts achieved a percentage of 80% with good criteria. The trial results on grade 6 students showed a percentage of 78% with good criteria. It was concluded that overall, "TALIGITAR Learning Media" was considered suitable for use in mathematics learning in grade 6. The results of the data analysis also showed an increase in students' interest in mathematics after using this media. This research can contribute to increasing students' interest in mathematics through innovative and interactive media.

## 1. INTRODUCTION

Mathematics has an important role in human life and the development of science. Mathematics is an abstract and complex subject, so many students find it difficult to learn and understand it, which results in them tending to avoid or not be interested in studying it (Yantoro et al., 2021; Zulbryanti et al., 2022). In an educational context, mathematics is a deep subject and has broad relevance in various aspects of daily life (Ridha et al., 2020; Shiddiq & Herman, 2023). Mathematics is part of the exact sciences

that play a significant role in various scientific disciplines and everyday life (Damayanti & Rufiana, 2021; Maghfiroh & Hardini, 2021). This is why mathematics learning must be designed interestingly to increase students' interest in learning mathematics. Interest is a key factor influencing the learning process and understanding of mathematics. Interest in mathematics can be a major driver in exploring complex mathematical concepts and solving mathematics-related problems. To understand mathematics, students need to be highly interested in learning mathematics. Interest is an urge to want to know, learn, admire, or have something. A student should have an interest that comes from internal motivation to learn. Learning is a natural process of acquiring knowledge or skills through learning activities (Adnyana & Yudaparnita, 2023; Lestariningsih & Sholichah, 2017). Interest in learning has a significant role in a student's life because interest is one of the keys to motivating a student (Rina Dwi Muliani & Arusman, 2022; Wigati, 2019). Previous research states that when a student is highly interested in learning, he will naturally be active and enthusiastic in participating in the learning process (Laksono et al., 2016; Trisnowali MS., 2017; Wigati, 2019; S. Wulandari et al., 2017). This interest can be reflected in various signs such as enthusiasm, desire, or desire to be involved in changing behavior through activities such as exploring knowledge and experience in the subject area (Marti'in, 2019; Radyuli & Rahmat, 2017; Suciani et al., 2022).

However, low interest in mathematics is a challenge for educators worldwide. Students' low interest in mathematics is caused by internal factors, such as students' lack of interest in mathematics and the view that mathematics is a difficult subject (B. B. A. Putri et al., 2019; Trisnowali MS., 2017). A low level of interest in learning students can result in a lack of interest in certain fields or even cause an attitude of rejection toward teachers (Unaenah et al., 2023; Wigati, 2019). Students' interest in learning mathematics tends to be low, and they tend not to focus and interact less with teachers in mathematics learning (Oktafyani et al., 2022; Unaenah et al., 2023). Students who have a low interest in learning material will experience boredom and be less motivated to participate in the learning process. Interest in learning mathematics among students still needs to be higher because many consider mathematics a challenging subject (Azzahra & Pramudiani, 2022; fably sucipto, 2021).

Other findings also reveal that many students consider mathematics a challenging subject due to the basic nature of mathematics, which is abstract and has interrelated concepts and principles (Kusuma & Hamidah, 2020; Norhayati et al., 2018; Utami et al., 2018; Wiryanto, 2020). Previous research also states that most students consider mathematics difficult and boring (Dara Asshofi et al., 2019; Widiarti et al., 2021). For some people, mathematics is the art of solving fascinating puzzles, while mathematics is a confusing challenge for others. However, many students consider mathematics to be a difficult and boring subject. One key element that is often overlooked is an interest in mathematics.

Sixth-grade students at Sanggar Bimbingan Kulim, Malaysia, also experienced a low interest in studying mathematics. Based on the results of interviews with students, it was found that students' interest in mathematics still needed improvement. This is supported by the fact that the learning carried out by teachers could be more interesting, tend to be more varied, and make it easier for students to understand mathematics. Students' low interest in mathematics can help their understanding of mathematical concepts and help their learning outcomes. Selecting and using appropriate learning methods, models, and media is crucial (Hasanah et al., 2019; Sumaji & Wahyudi, 2020). Previously, at Sanggar Bimbingan Kulim, Malaysia, mathematics learning did not involve using learning media that could provide effectiveness and joy in the learning process. Therefore, learning media is needed to become an effort that can increase students' interest in learning mathematics.

One approach that can increase students' interest in learning mathematics is to use interesting and interactive learning media (Widiarti et al., 2021; Wigati, 2019). Previous research findings also state that learning media can help students participate more in teaching and learning, activate creative thinking, and make learning more enjoyable (Maharani et al., 2020; Pertiwi & Dibia, 2018; Sina et al., 2019). Learning media is a group of tools or facilities teachers or educators use to interact with students or learners (Ridha et al., 2020; Sumirat et al., 2023). Learning media are all forms of communication planned to deliver information from sources to students.

Media use in increasing students' interest in mathematics is important in increasing effective learning at Sanggar Guidance Kulim, Malaysia. One way to increase students' interest in learning is to utilize learning media such as TALIGITAR learning media. TALIGITAR Learning Media (Smart Mathematics Multiplication and Division Tables). This media was developed to help students increase their interest in learning, understanding and mastering multiplication and division concepts in a more interactive and fun way. Using media aims to create a supportive learning environment where students can learn efficiently and effectively and achieve learning goals well (Laksono et al., 2016; Yurmaida, 2019). In today's educational environment, using media as a learning aid has become increasingly common. Innovative and interactive learning media can help students understand mathematical concepts better.

Previous research also states that learning media can support teachers in communicating learning material so that children can be encouraged to develop an interest in the material being taught (Wigati, 2019; Wulandari et al., 2023). Other research also states that learning media can support teachers in communicating learning material, strengthen students' creative thinking abilities, and attract students' attention to the learning process (Laksono et al., 2016; Tafonao, 2018). Learning media clarifies the learning material the teacher will deliver (Suka Maryana et al., 2019; Wulandari et al., 2023). The use of interesting and interactive teaching aids in teaching mathematics aims to support students in visualizing complex abstract concepts, facilitate understanding of lesson topics, and increase student motivation during the learning process (Indriasih et al., 2022; Suka Maryana et al., 2019). The novelty of this research can be seen from the lack of studies regarding TALIGITAR Media to increase students' interest in learning mathematics. The advantage of TALIGITAR media is that it can inspire new interests and desires and spur student motivation in the teaching and learning process. Based on this, this research aims to develop TALIGITAR Media to increase students' interest in mathematics. The aim of developing TALIGITAR Media is to help students learn mathematics.

## 2. METHOD

This research is a type of Research and Development (R&D) research using the ADDIE (Analysis, Design, Development, Implementation, Evaluation) development method (Bukhori et al., 2022; Spatioti et al., 2022). The first step in the ADDIE method is analysis, namely analyzing learning needs and objectives. At this stage, it is necessary to identify the problems experienced by students in learning mathematics and the goals to be achieved using TALIGITAR learning media. This makes it possible to understand the problems faced well so we can design learning media appropriately. Data regarding students' interest in learning mathematics was collected at this stage before implementing the TALIGITAR media using the questionnaire results. Questionnaire data is used as a basis for understanding students' problems and needs in studying mathematics. The second is design, namely designing TALIGITAR media. At this stage, TALIGITAR learning media is designed with various interactive features, visuals and mathematical games that are interesting, effective and fun to increase student interest. The next step is development, namely developing TALIGITAR learning media according to the design that has been previously designed. After the TALIGITAR media was developed, the implementation stage was carried out in the sixth grade at Sanggar Guidance Kulim, Malaysia. This media is introduced to students and effectively applied in the mathematics learning process. Researchers use TALIGITAR learning media to teach students basic multiplication and division concepts and motivate them to learn actively. After implementation, the evaluation stage was carried out to measure the success and effectiveness of the TALIGITAR learning media.

The research subjects are material experts and learning media experts. The determination of research subjects is based on the expertise of the selected experts. The test subjects were sixth-grade students at Sanggar Guidance Kulim, Malaysia. The methods used to collect data are observation, interviews and questionnaires. Observation and interview methods are used to analyze problems in the field. The questionnaire method is used to collect data from scores given by experts and students. The data collection instrument is a questionnaire. The questionnaire results assessed changes in students' interest in mathematics after implementing the TALIGITAR learning media. The evaluation results are used to improve and develop TALIGITAR learning media on an ongoing basis. The questionnaire grid is presented in Table 1 and Table 2.

**Table 1. Learning Media Expert Instrument**

| No | Aspect      | Question   |
|----|-------------|--|
| 1  | Appearance  | <ol style="list-style-type: none"> <li>1. Color composition of writing with background</li> <li>2. Layout</li> <li>3. Clarity of the title</li> <li>4. Attractive design</li> <li>5. Clarity and completeness of the material</li> </ol> |
| 2  | Ease of Use | <ol style="list-style-type: none"> <li>1. Ease of operation</li> <li>2. Instructions for use are clear</li> </ol>  |
| 3  | Expediency  | <ol style="list-style-type: none"> <li>1. Attract the focus of students' attention</li> <li>2. Can make students active in learning</li> <li>3. Make it easier for educators to explain the material</li> </ol>                          |
| 4  | Graphics    | <ol style="list-style-type: none"> <li>1. Use of color</li> <li>2. Use of letters</li> <li>3. Use of illustrations</li> </ol>  |

**Table 2.** Learning Media Expert Instrument

| No | Aspect       | Question  |
|----|--------------|---|
| 1  | Content      | 1. Media suitability with basic competencies<br>2. Clarity of learning objectives<br>3. Conformity of material with indicators of competency achievement<br>4. Suitability of image illustrations to the material |
| 2  | Language     | 1. Readability<br>2. Conformity with Indonesian language rules<br>3. Use language effectively and efficiently<br>4. The sentence structure is correct   |
| 3  | Presentation | 1. Providing motivation<br>2. Completeness of information   |

The techniques used to analyze data are qualitative descriptive analysis and quantitative descriptive analysis. Qualitative analysis techniques are used to analyze responses or comments given by experts and students regarding the TALIGITAR learning media being developed. Quantitative descriptive analysis is used to process data in scores given by experts and students to the TALIGITAR learning media being developed. This formula will calculate the score for each statement in the student interest in learning questionnaire, producing an interest score reflecting the overall interest level in learning. Formulas are used to analyze and express data in the form of scores on a scale of 1-100. The results of the interest score analysis are interpreted into the criteria listed in Table 3. To evaluate assessments from experts and trials on students, refer to the achievement level criteria documented in Table 4.

**Table 3.** Interpretation of Interest Scores

| No | Interest Score | Category    |
|----|----------------|-------------|
| 1  | 81 – 100       | Very Good   |
| 2  | 71 – 80        | Good        |
| 3  | 61 – 70        | Good Enough |
| 4  | 51 – 60        | Enough      |
| 5  | 0 – 50         | Less        |

**Table 4.** Achievement Level Criteria

| No | Achievement Level (%) | Qualification | Description                    |
|----|-----------------------|---------------|--------------------------------|
| 1  | 90 – 100              | Very good     | No need to revise              |
| 2  | 75 – 89               | Good          | Slightly revised               |
| 3  | 65 – 74               | Enough        | Revised sufficiently           |
| 4  | 55 – 64               | Not enough    | Many things need to be revised |
| 5  | 0 – 54                | Very less     | Remake the product             |

### 3. RESULT AND DISCUSSION

#### Result

This development research succeeded in producing an interactive learning media product called TALIGITAR (Smart Mathematics Multiplication and Division Table). TALIGITAR is a learning media designed to improve students' understanding of mathematical multiplication and division concepts. TALIGITAR has important features that make it unique and effective in supporting the student learning process. First, this media presents multiplication tables and diagonal division interactively. Students can easily explore this table and discover patterns and relationships between numbers in multiplication and division operations. With this interactive table, students can see how numbers are produced or divided in terms of mathematical operations. TALIGITAR learning media also provides various attractive visual displays. Features are used to visualize mathematical concepts more concretely and make them easy for students to understand. For example, when students choose the multiplication operation, TALIGITAR will display the multiplication with the help of an angled line that represents the number to be multiplied. Students can interact using this angle line to observe the results of multiplication. Apart from that, TALIGITAR also offers a variety of challenging and fun learning activities. This media provides mathematical games that involve multiplication and division operations as the main challenge. Students

can play interactive games and actively practice their multiplication and division skills. In this game, students must use multiplication and division tables to complete puzzles, solve problems, or achieve certain targets.

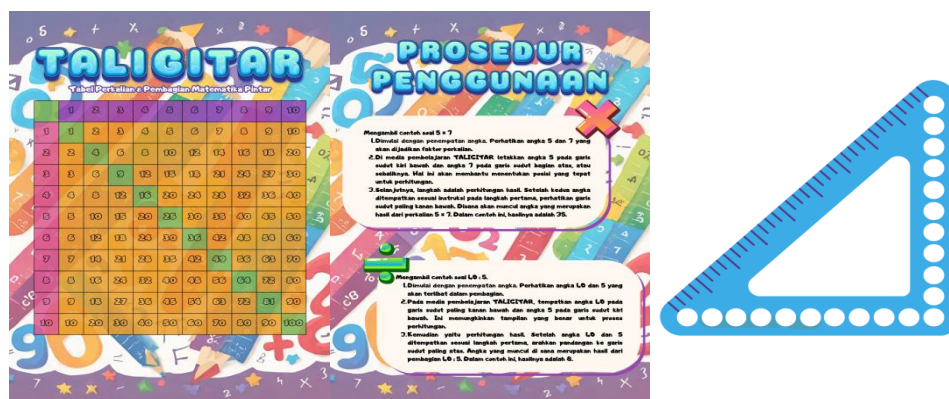
The analysis stage is very important in understanding the context of learning media and learning objectives. In the analysis stage, the problems students face in learning mathematics are identified in detail and specifically. The research identifies obstacles or difficulties that might influence the interest in learning of grade 6 students at Sanggar Bimbingan Kulim, Malaysia. The learning objectives to be achieved using TALIGITAR learning media are formulated. This goal includes critical aspects expected to increase students' interest in learning and achieve optimal learning outcomes. Data regarding students' interest in learning mathematics before implementing the media was collected using a questionnaire. The questionnaire was carefully designed to identify the level of interest of sixth-grade students at Sanggar Guidance Kulim, Malaysia, and the obstacles they faced in learning mathematics. The questionnaire data is analyzed carefully to help determine the focus of learning media design that can specifically address the problems that have been identified. The results of the analysis are used to gain an in-depth understanding of the problems students face in learning mathematics, respond to their needs, and improve their interest in learning mathematics. This understanding becomes the basis for designing appropriate learning media to provide effective solutions—assessment of Student Learning Interest Questionnaire Results Before Media Implementation is presented in Table 5.

**Table 5. Assessment of Student Learning Interest Questionnaire Results Before Media Implementation**

| No | Student | Total score | Interest Score | Interest Score Category |
|----|---------|-------------|----------------|-------------------------|
| 1  | 1       | 66          | 68.75          | Fairly Good             |
| 2  | 2       | 66          | 68.75          | Fairly Good             |
| 3  | 3       | 56          | 58.3           | Enough                  |

Second, design. The design stage begins with designing the TALIGITAR learning media. This design includes various interactive features, visuals, and math games that aim to attract students' attention and form an interactive and fun learning experience that is expected to increase the interest of sixth-grade students at Sanggar Bimbingan Kulim, Malaysia towards learning mathematics and motivate students to be more actively participate. The design of TALIGITAR learning media pays attention to aspects of usability and accessibility, ensuring that students can easily access and use TALIGITAR learning media so that they are easy to understand. Each design element is ensured to be relevant to the learning objectives that have been set. This design aims to achieve the desired learning outcomes and increase students' interest.

Third is the development stage. At this stage, TALIGITAR learning media was developed according to the design that had been previously designed. The TALIGITAR learning media development process was built with interactive features, visuals and mathematical games to create an interactive and fun learning experience. TALIGITAR learning media is designed with interactive features to ensure student involvement in the learning process. These features may include answer choices, simulations, and other activities to increase student participation. TALIGITAR learning media design focuses on visual aspects by utilizing attractive graphic elements and supporting understanding mathematical concepts. Considered the use of color and images to clarify learning material. The integration of mathematical games aims to make learning more fun and a tool to strengthen students' understanding of mathematical concepts with a fun approach. The development results are presented in Figure 1.



**Figure 1. Display of TALIGITAR Learning Media and its Angled Lines**

The TALIGITAR learning media that has been produced is validated by material and learning media experts. In addition, trials were carried out on students to measure the product's feasibility and effectiveness. A questionnaire was used to assess the feasibility of the developed product, which was filled out by material experts, learning media experts, and students. The validation process involves assessing the content, materials, and overall media quality. This questionnaire helps gain a comprehensive understanding of the aspects that need to be improved or improved. A recapitulation of the TALIGITAR media trial results is presented in Table 6. Based on the data shown in Table 6, the assessment from material experts reached a percentage of 76% with good criteria, while media experts achieved a percentage of 80% with good criteria. Furthermore, the results of trials on sixth-grade students at Sanggar Guidance Kulim, Malaysia, showed a percentage of 78% with good criteria. From this assessment, it can be concluded that overall, "TALIGITAR Learning Media" is considered suitable for use in mathematics learning in the sixth grade of Sanggar Bimbingan Kulim, Malaysia, although it requires some revisions.

**Table 6. Recapitulation of TALIGITAR Learning Media Trial Results**

| No | Trial Subject   | Result | Qualification |
|----|---|--------|---------------|
| 1  | Materials Expert  | 76%    | Good          |
| 2  | Media Expert  | 80%    | Good          |
| 3  | Sixth-grade students at Sanggar Bimbingan Kulim, Malaysia | 78%    | Good          |

Fourth, the implementation stage, namely implementing the TALIGITAR learning media at Sanggar Bimbingan Kulim, Malaysia, marks an important step in delivering learning material to students. After development, TALIGITAR learning media was introduced to sixth-grade students at Sanggar Bimbingan Kulim, Malaysia. The implementation process includes using this media effectively in the mathematics learning process. Students are given access to the TALIGITAR learning media and are directed to use this learning media as a supplement to learn basic math multiplication and division. During implementation, researchers can also use TALIGITAR learning media as a supporting tool in teaching students the concept of basic mathematical multiplication and division.

Fifth is evaluation. Evaluation to measure the success and effectiveness of the TALIGITAR learning media shows an increase in students' interest in mathematics and their understanding of basic multiplication and division concepts. The evaluation process involves collecting data from the evaluation results using TALIGITAR media. Evaluation data collection was carried out using a questionnaire. The questionnaire was designed to evaluate the extent to which the TALIGITAR learning media has influenced the interest of sixth-grade students at Sanggar Bimbingan Kulim, Malaysia, towards learning mathematics. The questionnaire results were used as an assessment tool to measure changes in the interest of sixth-grade students at Sanggar Bimbingan Kulim, Malaysia, towards mathematics after implementing the TALIGITAR learning media, presented in Table 7.

**Table 7. Assessment of Student Interest Questionnaire Results After Media Application**

| No | Student | Total Score | Interest Score | Interest Score Category |
|----|---------|-------------|----------------|-------------------------|
| 1  | 1       | 69          | 71.8           | Good                    |
| 2  | 2       | 70          | 72.9           | Good                    |
| 3  | 3       | 60          | 62.5           | Good enough             |

Aspects such as student interest, participation and engagement are evaluated. Sixth-grade students at Sanggar Guidance Kulim, Malaysia, stated that this media helped them understand multiplication and division better and more easily. The evaluation results become the basis for continuous improvements and development in TALIGITAR learning media. Revisions were carried out considering input and suggestions from experts to improve the effectiveness of the media. Evaluation should be the final stage and part of a continuous improvement cycle. Evaluation data provides valuable insights to continuously improve learning media's design, content, and interactivity.

Overall, TALIGITAR learning media is an innovative and interactive learning tool for multiplication and division. In an educational context, this media can be used inside and outside the classroom. TALIGITAR can be an effective learning resource for students, helping them strengthen their math skills and build confidence in dealing with multiplication and division concepts.

## Discussion

This research shows that the TALIGITAR learning media has very good qualifications and is suitable for learning. TALIGITAR learning media is suitable for use in learning due to several factors. First,

TALIGITAR learning media is suitable for learning because it can effectively increase students' interest. Students show enthusiasm and interest in studying mathematics using learning media (Hermawan et al., 2022; Maharani et al., 2020; Pertiwi & Dibia, 2018). Sixth-grade students at Sanggar Guidance Kulim, Malaysia, feel involved and motivated by the interactive interaction of TALIGITAR learning media. This means that the TALIGITAR learning media has increased students' interest in mathematics through a fun and interesting learning approach. Apart from that, using learning media also helps students understand concepts better (Laksono et al., 2016; Wigati, 2019). Previous research findings also state that using learning media can significantly increase motivation and interest in learning (Octavyanti & Wulandari, 2021; Rasvani & Wulandari, 2021). Students who initially had difficulty understanding mathematical concepts could take advantage of the visualizations provided by TALIGITAR learning media. The focus of learning can improve students' understanding of basic mathematical multiplication and division material. Besides providing an understanding of concepts, media can also increase students' activeness in learning (Abdul Karim et al., 2020; Utami et al., 2018).

Second, TALIGITAR learning media is suitable for learning because it increases students' understanding. This research shows that using TALIGITAR learning media in learning basic mathematics multiplication and division has a positive impact. Students who use the media show increased interest and understanding of these mathematical concepts (Dara Asshofi et al., 2019; Duwi et al., 2021; Widiarti et al., 2021). The questionnaire results collected at the analysis stage became the main basis for designing TALIGITAR learning media. Identification of suggestions and input from experts allows developers to design more appropriate and engaging content. An attractive learning design can optimize students' understanding of messages or learning materials during the learning process (Abdul Karim et al., 2020; D. N. S. Putri et al., 2022; Rasvani & Wulandari, 2021; Ridha et al., 2020). Apart from that, evaluation from experts also makes an important contribution in determining the focus of development to suit students' level of understanding regarding the concepts of multiplication and division in mathematics. Thus, TALIGITAR learning media not only acts as a tool but also an effective means to help students build a strong foundation in understanding basic multiplication and division. Previous findings also state that learning media is important for building and improving students' understanding (Ardhiyah & Radia, 2020; Sabilla et al., 2020; Widiarti et al., 2021).

Third, TALIGITAR learning media is suitable for learning because it is interesting and motivating. TALIGITAR learning media allows them to observe patterns and relationships between numbers more concretely and intuitively. In the world of education that continues to develop, interactive learning media can help create a more positive, challenging and enjoyable learning atmosphere (Anita et al., 2021; Ariani & Festiyed, 2019; Dara Asshofi et al., 2019; Duwi et al., 2021; Widiarti et al., 2021). TALIGITAR learning media can add variety to teaching methods and increase students' participation in mathematics learning. This transformation reflects the positive impact of interactive and innovative learning media on students' interest in learning mathematics (Ardhiyah & Radia, 2020; Prasetya et al., 2021). TALIGITAR is an effective solution to improve learning of basic mathematical multiplication and division. Through interactivity, effectiveness and attractive visualization, this media can strengthen students' understanding of concepts and increase their interest in mathematics. Thus, TALIGITAR can improve the quality of mathematics learning for grade 6 students at Sanggar Bimbingan Kulim, Malaysia, which can increase students' interest in mathematics.

Previous research findings also confirm that creative media is necessary for mathematics learning (M. D. Dewi & Izzati, 2020; Purba & Harahap, 2022). Other research also states that interactive elements, visuals, and mathematical games can increase student interest and participation (Arifah et al., 2019; R. Dewi et al., 2018; Fathimah & Ishartiwi, 2018). The advantage of TALIGITAR learning media is that students are invited to provide feedback regarding their learning experience. This implementation also involves managing technical aspects, such as ensuring that all devices function properly and that access to TALIGITAR learning media is provided adequately. Thus, this Implementation stage is not only about implementing learning media but also ensuring that TALIGITAR can positively impact the learning process of sixth-grade students at Sanggar Bimbingan Kulim, Malaysia. The limitation of this research is that the TALIGITAR learning media developed can only be used by sixth-grade elementary school students because it is suitable for children's development. This research implies that teachers can use the TALIGITAR learning media developed to increase elementary school students' interest and learning outcomes in mathematics. By taking an innovative and interactive approach, this media can improve students' perceptions of mathematics and help them understand concepts better. This research contributes to increasing students' interest and motivation towards mathematics subjects.

The limitations of this research lie in the context of the use of TALIGITAR learning media, which is limited to sixth-grade elementary school students, for reasons of suitability for children's development. Although it has great potential to increase students' interest and understanding of mathematics, these

restrictions limit the reach of use of this medium at certain elementary school levels. However, the main advantage of TALIGITAR is its ability to create an interactive, fun learning experience that builds a strong understanding of mathematical concepts. With its innovative and interactive approach, TALIGITAR has improved students' perceptions of mathematics, making it an effective tool for increasing students' interest and learning outcomes. The implications of this research are very relevant for teachers in improving the quality of mathematics learning at the elementary school level by providing innovative and interactive tools to help students understand mathematical concepts better and increase their overall learning motivation.

#### 4. CONCLUSION

The results of the data analysis show that TALIGITAR learning media has good qualifications. It was concluded that the TALIGITAR learning media was suitable for learning. TALIGITAR learning media in sixth-grade mathematics learning at Sanggar Guidance Kulim, Malaysia, can increase students' interest in mathematics. By taking an innovative and interactive approach, this media can improve students' perceptions of mathematics and help them understand concepts better. This research contributes to increasing students' interest and motivation towards mathematics subjects.

#### 5. REFERENCES

- Abdul Karim, Dini Savitri, & Hasbullah. (2020). Pengembangan Media Pembelajaran Matematika Berbasis Android Di Kelas 4 Sekolah Dasar. *Jurnal Lebesgue: Jurnal Ilmiah Pendidikan Matematika, Matematika Dan Statistika*, 1(2), 63–75. <https://doi.org/10.46306/lb.v1i2.17>.
- Adnyana, K. S., & Yudaparmita, G. N. A. (2023). Peningkatan Minat Belajar IPAS Berbantuan Media Gambar Pada Siswa Sekolah Dasar. *Edukasi: Jurnal Pendidikan Dasar*, 4(1), 61. <https://doi.org/10.55115/edukasi.v4i1.3023>.
- Anita, Y., Thahir, A., Komarudin, K., Suherman, S., & Rahmawati, N. D. (2021). Buku Saku Digital Berbasis STEM: Pengembangan Media Pembelajaran terhadap Kemampuan Pemecahan Masalah. *Mosharafa: Jurnal Pendidikan Matematika*, 10(3), 401–412. <https://doi.org/10.31980/mosharafa.v10i3.1004>.
- Ardhiyah, M. A., & Radia, E. H. (2020). Pengembangan Media Berbasis Adobe Flash Materi Pecahan Matematika untuk Meningkatkan Hasil Belajar. *Jurnal Penelitian Dan Pengembangan Pendidikan*, 4(3), 479–485. <https://doi.org/10.23887/jppp.v4i3.28258>.
- Ariani, R., & Festiyed. (2019). Analisis Landasan Ilmu Pengetahuan dan Teknologi Pendidikan dalam Pengembangan Multimedia Interaktif. *Jurnal Penelitian Pembelajaran Fisika*, 5(2), 155–162. <https://doi.org/10.24036/jppf.v5i2.107439>.
- Arifah, R. E. N., Sukirman, S., & Sujalwo, S. (2019). Pengembangan Game Edukasi Bilomatika untuk Meningkatkan Hasil Belajar Siswa pada Mata Pelajaran Matematika Kelas 1 SD. *Jurnal Teknologi Informasi Dan Ilmu Komputer*, 6(6), 617. <https://doi.org/10.25126/jtiik.2019661310>.
- Azzahra, M. D., & Pramudiani, P. (2022). Pengaruh Quizizz sebagai Media Interaktif terhadap Minat Belajar Siswa pada Pelajaran Matematika Kelas V di Sekolah Dasar. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, 6(3), 3203–3213. <https://doi.org/10.31004/cendekia.v6i3.1604>.
- Bukhori, H. A., Sunarti, S., Widyatmoko, T., & Ting, H. L. (2022). ADDIE method for implementation of virtual reality in online course using model project-based learning. *JINoP (Jurnal Inovasi Pembelajaran)*, 8(1). <https://doi.org/10.22219/jinop.v8i1.18905>.
- Damayanti, F., & Rufiana, I. S. (2021). Analisis Pemahaman Konsep Matematika pada Materi Bangun Ruang Kubus dan Balok Ditinjau dari Motivasi Belajar. *Edupedia*, 5(2), 145–154. <https://doi.org/10.24269/ed.v4i2.555>.
- Dara Asshofi, M. P., Damayani, A. T., & Rofian. (2019). Peningkatan Hasil Belajar Matematika Materi Faktor Persekutuan Besar dan Kelipatan Persekutuan Kecil melalui Model NHT Berbantu Media Papan Puzzle Berbintang. *Jurnal Ilmiah Sekolah Dasar*, 3(4), 521. <https://doi.org/10.23887/jisd.v3i4.21881>.
- Dewi, M. D., & Izzati, N. (2020). Pengembangan Media Pembelajaran PowerPoint Interaktif Berbasis RME Materi Aljabar Kelas VII SMP. *Delta: Jurnal Ilmiah Pendidikan Matematika*, 8(2), 217. <https://doi.org/10.31941/delta.v8i2.1039>.
- Dewi, R., Ilma, R., Putri, I., & Hartono, Y. (2018). Pengembangan Multimedia Interaktif Berbasis PMRI Materi Jajargenjang. *Kreano, Jurnal Matematika Kreatif-Inovatif*, 9(1), 78–83. <https://doi.org/10.15294/kreano.v9i1.14367.g7951>.
- Duwi, Satria, T. G., & Febriandi, R. (2021). Pengembangan Lembar Kerja Siswa (LKS) Matematika Berbasis



- Discovery Learning Pada Materi Statistika Untuk Siswa Kelas IV SD. *Jurnal Ilmiah Aquinas*, 4(2), 246–259. <https://doi.org/10.37150/jp.v3i2.796>.
- fably sucipto, M. D. (2021). Analisis Minat Belajar Siswa SMP pada Pembelajaran Matematika. *Pembelajaran Matematika Inovatif*, 4(4), 799–808. <https://doi.org/10.22460/jpmi.v4i4.799-808>.
- Fathimah, N. S., & Ishartiwi, I. (2018). Pengembangan Multimedia Permainan Interaktif Pembelajaran Berhitung Bagi Anak Diskalkulia Usia Prasekolah. *Jurnal Inovasi Teknologi Pendidikan*, 5(2), 115–128. <https://doi.org/10.21831/jitp.v5i2.15541>.
- Hasanah, N. F., Nurtaman, M. E., & Hanik, U. (2019). Pengaruh Model Pembelajaran Kooperatif Tipe Rotating Trio Exchange (Rte) Terhadap Hasil Belajar Dan Minat Belajar Matematika Siswa Kelas V Sdn Pinggir Papas 1 Sumenep. *Widyagogik : Jurnal Pendidikan Dan Pembelajaran Sekolah Dasar*, 6(2), 112. <https://doi.org/10.21107/widyagogik.v6i2.5195>.
- Hermawan, R. M., Yuspriyati, D. N., & Purwasih, R. (2022). Analisis Minat Belajar Siswa SMP Kelas VIII pada Materi Pokok Bangun Ruang Sisi Datar Berbantuan Aplikasi Geogebra. *Prisma*, 11(1), 203. <https://doi.org/10.35194/jp.v11i1.1982>.
- Indriasih, A., Haryati, Y., Khasanah, D. R. A. U., Ismartoyo, I., & Hariyono, M. (2022). Pengembangan Media Pembelajaran Untuk Meningkatkan Kompetensi Guru TK di Kecamatan Limbangan Kabupaten Kendal. *JMM - Jurnal Masyarakat Merdeka*, 5(1), 19. <https://doi.org/10.51213/jmm.v5i1.98>.
- Kusuma, J. W., & Hamidah. (2020). Perbandingan Hasil Belajar Matematika Dengan Penggunaan Platform Whatsapp Group Dan Webinar Zoom Dalam Pembelajaran Jarak Jauh Pada Masa Pandemi Covid 19. *Jurnal Ilmiah Pendidikan Matematika*, 5(1), 97–106. <https://doi.org/10.26877/jipmat.v5i1.5942>.
- Laksono, Y. S., Ariyanti, G., & Santoso, F. G. I. (2016). Hubungan Minat Belajar Siswa Terhadap Prestasi Belajar Matematika Siswa Dalam Pembelajaran Kooperatif Tipe Stad Menggunakan Komik. *Jurnal Edukasi Matematika Dan Sains*, 1(2), 60–64. <https://doi.org/10.25273/jems.v1i2.143>.
- Lestariningsih, & Sholichah, B. (2017). Pengaruh Sikap Siswa pada Matematika terhadap Hasil Belajar Materi Persamaan Kuadrat. *Pendidikan Matematika RAFA*, 3(2), 207–213. <https://doi.org/10.19109/jpmrafa.v3i2.1742>.
- Maghfiroh, Y., & Hardini, A. T. A. (2021). Pengembangan Modul Pembelajaran Matematika Materi Pecahan Kelas V Sekolah Dasar. *Jurnal Educatio FKIP UNMA*, 7(2), 272–281. <https://doi.org/10.31949/educatio.v7i2.997>.
- Maharani, S., Nusantara, T., As'ari, A. R., & Qohar, A. (2020). Computational Thinking : Media Pembelajaran CSK (CT-Sheet for Kids) dalam Matematika PAUD. *Jurnal Obsesi : Jurnal Pendidikan Anak Usia Dini*, 5(1), 975–984. <https://doi.org/10.31004/obsesi.v5i1.769>.
- Marti'in. (2019). Analisis Tentang Rendahnya Minat Belajar Peserta Didik Kelas Xi Sma Negeri 5 Pontianak. *Universitas Tanjungpura*, 8(7), 1–8. <https://doi.org/10.26418/jppk.v8i7.33958>.
- Norhayati, N., Hasanuddin, H., & Hartono, H. (2018). Pengembangan Media Pembelajaran Berbasis Contextual Teaching And Learning untuk Memfasilitasi Kemampuan Pemecahan Masalah Matematis Siswa Madrasah Tsanawiyah. *JURING (Journal for Research in Mathematics Learning)*, 1(1), 19. <https://doi.org/10.24014/juring.v1i1.4771>.
- Octavyanti, N. P. L., & Wulandari, I. G. A. A. (2021). Pengembangan Video Pembelajaran Berbasis Pendekatan Kontekstual Pada Mata Pelajaran Matematika Kelas IV SD. *Jurnal Edutech Undiksha*, 9(1), 66–74. <https://doi.org/10.23887/jeu.v9i1.32223>.
- Oktafyani, A., Istiningih, S., & Jiwandono, I. S. (2022). Pengaruh Penggunaan Media Pembelajaran Kartu Angka Perkalian Terhadap Minat Belajar Matematika. *Journal of Classroom Action Research*, 4(3), 67–75. <https://doi.org/10.29303/jcar.v4i3.1908>.
- Pertiwi, N. L. S. A., & Dibia, I. K. (2018). Penerapan Model Problem Based Learning Berbantuan Media Interaktif Untuk Meningkatkan Hasil Belajar Matematika Siswa. *Journal of Education Action Research*, 2(4), 331. <https://doi.org/10.23887/jeur.v2i4.16325>.
- Prasetya, W. A., Suwatra, I. I. W., & Mahadewi, L. P. P. (2021). Pengembangan Video Animasi Pembelajaran Pada Mata Pelajaran Matematika. *Jurnal Penelitian Dan Pengembangan Pendidikan*, 5(1), 60–68. <https://doi.org/10.23887/jppp.v5i1.32509>.
- Purba, Y. A., & Harahap, A. (2022). Pemanfaatan Aplikasi Canva Sebagai Media Pembelajaran Matematika Di SMPN 1 NA IX-X Aek Kota Batu. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, 6(2), 1325–1334. <https://doi.org/10.31004/cendekia.v6i2.1335>.
- Putri, B. B. A., Muslim, A., & Bintaro, T. Y. (2019). Analisis Faktor Rendahnya Minat Belajar Matematika Siswa Kelas V Di Sd Negeri 4 Gumiwang. *Jurnal Educatio FKIP UNMA*, 5(2), 68–74. <https://doi.org/10.31949/educatio.v5i2.14>.
- Putri, D. N. S., Islamiah, F., Andini, T., & Marini, A. (2022). Analisis Pengaruh Pembelajaran Menggunakan Media Interaktif Terhadap Hasil Pembelajaran Siswa Sekolah Dasar. *Pendidikan Dasar Dan Sosial*

- Humaniora*, 2(2), 367. <https://doi.org/10.53625/jpdsh.v2i2.4290>.
- Radyuli, P., & Rahmat, V. (2017). Korelasi Disiplin Belajar dan Kreativitas Belajar Terhadap Minat Belajar Teknologi Informasi dan Komunikasi (TIK). *Jurnal Pendidikan Dan Teknologi Informasi*, 4(2), 262–271. <https://doi.org/10.23887/jipp.v3i3.21834>.
- Rasvani, N. L. A., & Wulandari, I. G. A. (2021). Pengembangan media pembelajaran aplikasi maca (materi pecahan) berorientasi teori belajar ausubel muatan matematika. *Mimbar PGSD Undiksha*, 9(1), 74–81. <https://doi.org/10.23887/jjgsd.v9i1.32032>.
- Ridha, Bambang, & Siska. (2020). Pengembangan Video Media Pembelajaran Matematika Dengan Bantuan Powtoon. *Jurnal Pemikiran Dan Penelitian Pendidikan Matematika (JP3M)*, 2(2), 85–96. <https://doi.org/10.36765/jp3m.v2i2.29>.
- Rina Dwi Muliani, R. D. M., & Arusman, A. (2022). Faktor - Faktor yang Mempengaruhi Minat Belajar Peserta Didik. *Jurnal Riset Dan Pengabdian Masyarakat*, 2(2), 133–139. <https://doi.org/10.22373/jrpm.v2i2.1684>.
- Sabilla, A. F., Irianto, S., & Badarudin. (2020). Pengembangan Media Pembelajaran Matematika Materi Keliling dan Luas Bangun Datar Menggunakan Animasi Powtoon di Kelas IV SD Universitas Muhammadiyah Purwokerto. *Jurnal Ilmiah Wahana Pendidikan*, 6(3), 317–322. <https://doi.org/10.5281/zenodo.3951014>.
- Shiddiq, N. F., & Herman, T. (2023). Concept Image Siswa Kelas VII SMP pada Materi Bentuk Aljabar. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, 7(2), 1404–1415. <https://doi.org/10.31004/cendekia.v7i2.2238>.
- Sina, I., Farlina, E., Sukandar, S., & Kariadinata, R. (2019). Pengaruh Multimedia Interaktif dalam Pembelajaran Matematika Terhadap Kemampuan Komunikasi Matematis Siswa. *Suska Journal of Mathematics Education*, 5(1), 57. <https://doi.org/10.24014/sjme.v5i1.5081>.
- Spatioti, A. G., Kazanidis, I., & Pange, J. (2022). A Comparative Study of the ADDIE Instructional Design Model in Distance Education. *Information (Switzerland)*, 13(9), 1–20. <https://doi.org/10.3390/info13090402>.
- Suciani, N. K., Sudarma, I. K., & Bayu, G. W. (2022). The Impact of Learning Style and Learning Motivation on Students' Science Learning Outcomes. *MIMBAR PGSD Undiksha*, 10(2), 395–401. <https://doi.org/10.23887/jjgsd.v10i2.49811>.
- Suka Maryana, I. M., Candiasa, I. M., & Waluyo, D. (2019). Pengembangan Game Edukasi Sebagai Media Pembelajaran Deret Bilangan di Sekolah Menengah Atas. *Jurnal Pendidikan Matematika Undiksha*, 9(2), 19. <https://doi.org/10.23887/jjpm.v9i2.19890>.
- Sumaji, S., & Wahyudi, W. (2020). Refleksi Pembelajaran Matematika SMK Muhammadiyah 1 Ponorogo Pada Materi Persamaan dan Pertidaksamaan Linear Mutlak. *Jurnal Cendekia : Jurnal Pendidikan Matematika*, 4(2), 746–755. <https://doi.org/10.31004/cendekia.v4i2.281>.
- Sumirat, A. D., Yuliana, E. R., Dania, H., & Mutaqien, A. (2023). Penerapan Media Pembelajaran Finger Counting Pada Metode Jarimatika Di Tpa Kampung Cihideung. <https://doi.org/10.30997/ejpm.v4i1.6693>.
- Tafonao, T. (2018). Peranan Media Pembelajaran Dalam Meningkatkan Minat Belajar Mahasiswa. *Jurnal Komunikasi Pendidikan*, 2(2), 103. <https://doi.org/10.32585/jkp.v2i2.113>.
- Trisnowali MS, A. (2017). Pengaruh Motivasi Berprestasi, Minat Belajar Matematika, Dan Sikap Belajar Matematika Terhadap Hasil Belajar Matematika Pada Siswa SMAN 2 Watampone. *MaPan : Jurnal Matematika Dan Pembelajaran*, 5(2). <https://doi.org/10.24252/mapan.%20v5n2a8>.
- Unaenah, E., Saharani, A. L., Putri, C. M., & Pertiwi, N. P. (2023). Analisis Minat Belajar Siswa melalui Pendekatan Matematika Realistik pada Pembelajaran Berbasis Daring di Kelas VI Sekolah SDN Blendung. *YASIN*, 3(4), 887–893. <https://doi.org/10.58578/yasin.v3i4.1539>.
- Utami, T. N., Jatmiko, A., & Suherman, S. (2018). Pengembangan Modul Matematika dengan Pendekatan Science, Technology, Engineering, And Mathematics (STEM) pada Materi Segiempat. *Desimal: Jurnal Matematika*, 1(2), 165. <https://doi.org/10.24042/djm.v1i2.2388>.
- Widiarti, N. K., Sudarma, I. K., & Tegeh, I. M. (2021). Meningkatkan Hasil Belajar Matematika Kelas V SD Melalui Media Video Pembelajaran. *Jurnal Edutech Undiksha*, 9(2), 195. <https://doi.org/10.23887/jeu.v9i2.38376>.
- Wigati, S. (2019). Penggunaan Media Game Kahoot Untuk Meningkatkan Hasil Dan Minat Belajar Matematika. *AKSIOMA: Jurnal Program Studi Pendidikan Matematika*, 8(3), 457–464. <https://doi.org/10.24127/ajpm.v8i3.2445>.
- Wiryanto, W. (2020). Proses pembelajaran matematika di sekolah dasar di tengah pandemi covid-19. *Jurnal Review Pendidikan Dasar: Jurnal Kajian Pendidikan Dan Hasil Penelitian*, 6(2), 125–132. <https://doi.org/10.26740/jrpd.v6n2.p125-132>.
- Wulandari, A. P., Salsabila, A. A., Cahyani, K., Nurazizah, T. S., & Ulfiyah, Z. (2023). Pentingnya Media

- Pembelajaran dalam Proses Belajar Mengajar. *Journal on Education*, 5(2), 3928–3936. <https://doi.org/10.31004/joe.v5i2.1074>.
- Wulandari, S., Marhadi, H., & Antosa, Z. (2017). Hubungan Minat Belajar dengan Hasil Belajar IPS Siswa Kelas IV SD Negeri Gugus III Kecamatan Rumbai Kota Pekanbaru. *Joyful Learning Journal*, 6(3), 1–11. <https://doi.org/10.15294/jlj.v6i3.15207>.
- Yantoro, Y., Kurniawan, D. A., Perdana, R., & Rivani, P. A. (2021). A Survey of Process Skills Mathematics Learning in Elementary School. *Jurnal Pendidikan Dan Pengajaran*, 54(3), 467–474. <https://doi.org/10.23887/jpp.v54i3.37180>.
- Yurmaida, Y. (2019). Penggunaan Media Audio Visual Untuk Meningkatkan Keterampilan Menulis Permulaan Pada Anak Kelompok B Tk Pertiwi I Kota Jambi. *Jurnal Literasiologi*, 2(1), 17. <https://doi.org/10.47783/literasiologi.v2i1.28>.
- Zulbryanti, A. C., Wahyudi, W., & Nurhidayah, D. A. (2022). Ropitri: Media Pembelajaran Matematika Materi Trigonometri Untuk Meningkatkan Motivasi Belajar Siswa. *EDU-MAT: Jurnal Pendidikan Matematika*, 10(2), 300. <https://doi.org/10.20527/edumat.v10i2.14160>.